School Shop

vol. VI no. 6
FEBRUARY, 1947

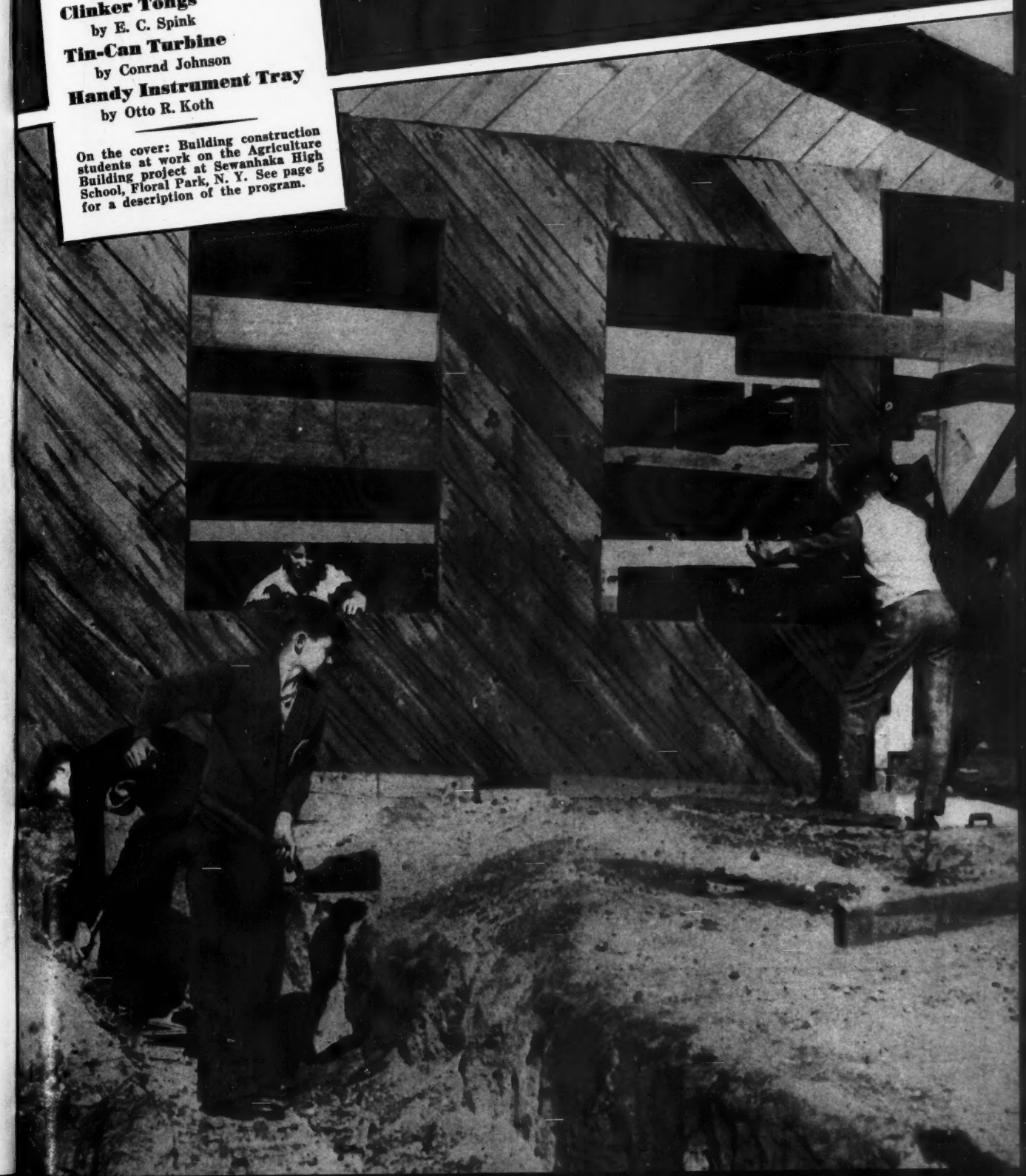
Teaching Building Construction in the School Shop
by Hugh Flaherty

Clinker Tongs
by E. C. Spink

Tin-Can Turbine
by Conrad Johnson

Handy Instrument Tray
by Otto R. Koth

On the cover: Building construction students at work on the Agriculture Building project at Sewanhaka High School, Floral Park, N. Y. See page 5 for a description of the program.



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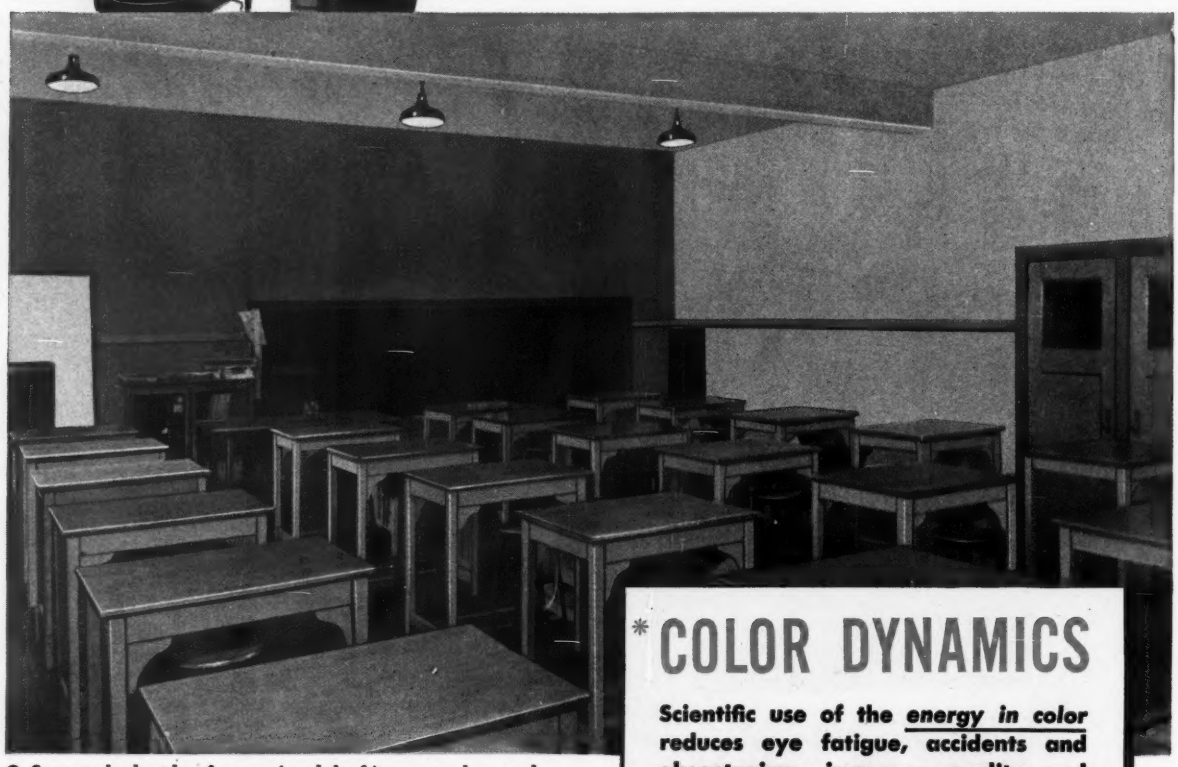

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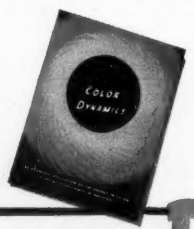

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In the Offing . . .

Problems in plastics will be covered in the next issue as well as other areas of shop instruction. Be on the lookout for the April Directory Issue which will contain a complete listing of firms which have supplies, materials, and products for the school shop field. This issue will also carry other valuable directory features. Keep the April issue for reference throughout the year!

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School Shop

FOR INDUSTRIAL EDUCATION TEACHERS

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School Shop TALK

COMMENTS ON ISSUES FACING INDUSTRIAL EDUCATION

Up Three More

Illinois, Ohio, and Louisiana have joined the growing list of states offering supervision or counselling (which is more to our liking) in industrial arts at the state level. These states now have full-time supervisors (or counsellors) of industrial arts who are available for consultation with local school systems and teachers on problems of industrial-arts instruction.

The score now stands at 10 states with supervisors of industrial arts and 38 without. It is rather interesting that no one section of the country has a monopoly on this type of state service. New England is represented by Connecticut, the Middle Atlantic states by New York and New Jersey, the South by North Carolina and Louisiana, the Mid-West by Ohio, Indiana, and Illinois, and the West by Utah.

Our operatives report that these supervisors are doing a real job in their respective states. They help local school boards who want to establish industrial-arts programs. They help local directors and superintendents who are planning new shop installations. They aid teachers of industrial arts in small schools where no local supervisory help is available. They work with teacher groups in formulating courses of study. They make facilities available for teachers to learn new processes and to work with new materials. They come to the aid of industrial-arts programs which have bogged down for one reason or another and need some rejuvenation. And lots more.

The best part of all this is that the supervisors (or counsellors) of industrial arts come to the local community on request. No bull-dozing. Just help.

Your Editor

The Use of Industrial Methods in Shop Administration

By E. L. Williams, Head, Department of Industrial Education, and Director, Industrial Extension Service, The A. & M. College of Texas

OUR shops are the students' first real introduction to industry. Their parents, relatives, or neighbors may have been employed in industry. In their academic subjects and courses in guidance, they probably studied about industry. They are, in most cases, too young to have visited industries to observe industrial practices. Most of our pupils of secondary-school age are almost in the same situation as a college student who said he never knew how wood was made round until he got into a college shop. This introduction of our young citizens to one of the most important phases of American life should be as true as we can possibly make it.

Among the objectives of industrial-arts teaching will be found statements similar to the following, "To familiarize the pupils with the materials, methods, and practices of industry." The definition of vocational education is given as, "To prepare an individual to enter into, and advance in, a chosen occupation." We might say that these are definite orders that the leaders of industrial education have given us to carry out as teachers of shopwork. Neither the industrial-arts nor the trade-and-industrial teacher can carry out these objectives without staying abreast of modern industrial methods.

Our school shops should represent progressive industry rather than so-called "progressive education." They will then fulfill the purpose for which they were made part of our educational system.

Following are a few factors which may be considered when evaluating a school shop for industrial methods:

Foreman Training.—Are the various phases of the management of the shop under student foremen and leadmen? Is the teacher building leaders? This factor has been tried and proven by progressive teachers for two decades. Either the teacher works the students or the students work the teacher.

Tool Accounting.—Regardless of the specific system, does the teacher have *a* system, and does it work? Do the pupils learn the value, appreciate the precision qualities, and practice proper care, use, and accounting of tools? Toolrooms, tool panels, tool cases, tool racks, and various tool check systems are in use in industries and schools. The success of any of them depends on the teacher.

Materials.—Are the proper materials used on all jobs and projects and do the students learn *why?* Do they also learn specifications, units of purchase, value, and source of supply?

Methods.—In our war industries, job methods training and work simplification courses were given to thousands of supervisors. Initiative was developed and production was increased with less tax on human effort. Why not a job study of every job, project, or operation in the school shop?

Time Accounting. — Employers have said that recruits from schools have no appreciation of the value of time. Where time-accounting has been made a part of school training, students developed a better appreciation of the value of time, and those who went into industry found the transition easier. It is true that in school we are after accuracy first and then speed, but we can start to reduce wasted time and unnecessary movements from the beginning.

Personnel Rating.—Do the grades *A, B, C, D,* or even the percentage system fill the need for a constructive evaluating system? Why not adapt an industrial personnel rating form for shop students, so that both student and teacher will know in which factors the student is low and why. Corrective measures can then be applied.

Safety or Accident Prevention.—Take out a school membership in the National Safety Council and set up safety committees, etc., as is done in industry. It is the best of training for life, citizenship, or employment, whichever are your objectives.

"Grievance Committee."—Why not? Industry has them, and will for years to come. Perhaps we can help labor and management by actual constructive study and participation in shop problems as they develop in our classes.

Let's make the school shops industry's induction laboratories.

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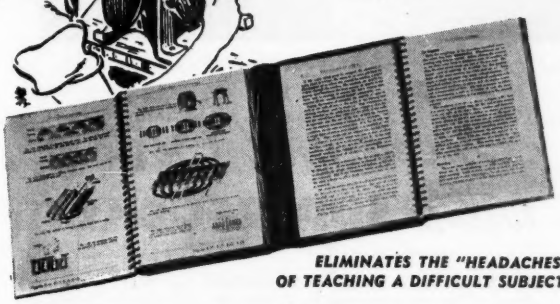

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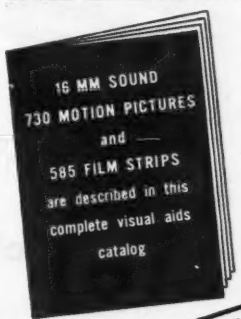

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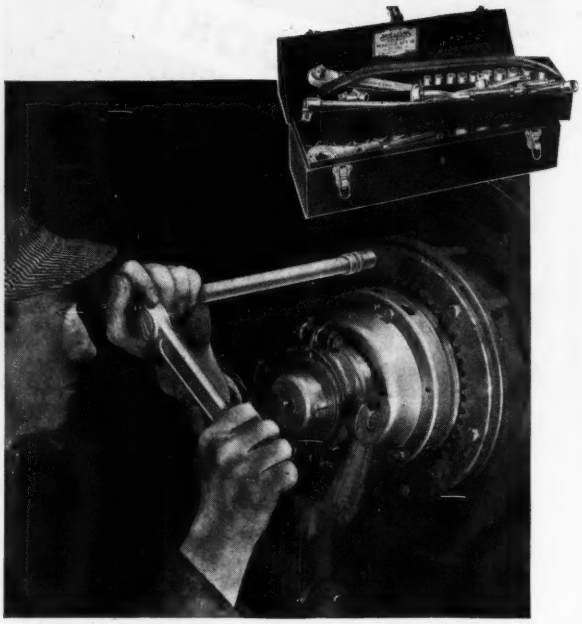

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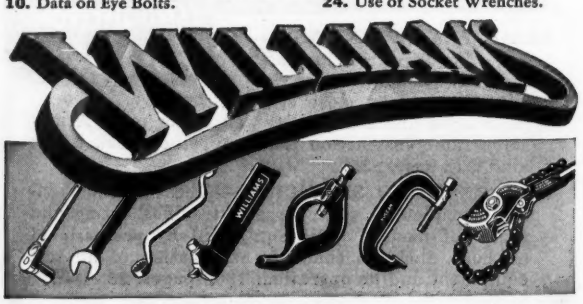
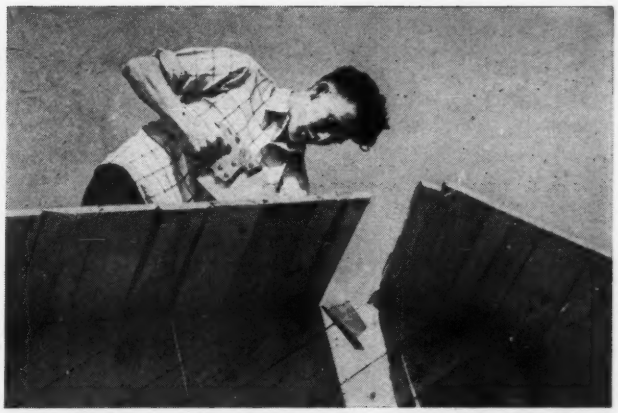


Teaching Building Construction in the School Shop

BY *Hugh Flaherty*

The problem of establishing a curriculum in the building trades is not easy when facilities are limited. Here is how one high-school solved the problem. Dr. Flaherty is Director of Vocational Education for the Sewanhaka High School, Floral Park, New York.



Student in building construction trimming the roof boards on the agricultural building.

WHAT can be done by a suburban high school to meet the need for a vocational course in building construction within the limitations imposed by an industrial-arts wood shop? Faced with this question in 1944 when it became apparent that we would experience a great postwar boom in residential construction, the vocational staff of Sewanhaka High School, of Floral Park, Long Island, looked at the 1430 square feet of woodworking shop and pondered.

Obviously, it would be questionable educational policy to throw overboard the industrial-arts woodworking classes and turn the shop over to vocational work, even if a satisfactory course in building construction could be carried on with only 1430 square feet in which to work. In the end, the issue of industrial arts versus vocational work was compromised by using the shop four periods a day for industrial-arts woodworking and four periods for building construction. This meant a reduction of two periods a day for woodworking, but as our industrial-arts program consists of seven other unit shops, this was not too bad. There still remained the problem of finding space to do a real teaching job in building construction. Obviously, again, a real job could not be done in the limited area of the wood shop. We were conscious of the fact that all too many building construction courses had died aborning because the shop was not large enough to get beyond the stage of building scale models.

Taking a page from the experience of Ithaca where the building construction classes in the period prior to the war decided to build one house each year for a private individual, we decided to make a project of that kind our goal. Because of the scarcity of building materials, and our own lack of experience in a complex undertaking of this kind, it was proposed to build our first venture on the school grounds, and we decided on a one-story ranch type house to be used as an agriculture building. We wanted a structure that could be built in sections or units, so that one could be framed and closed in before the next one was started. In this way we would not be put in the position of biting off more than we could chew and such a plan would have the added advantage of spreading the work over two or three years, adding to the instructional value of the project as well as reducing the per-pupil cost.

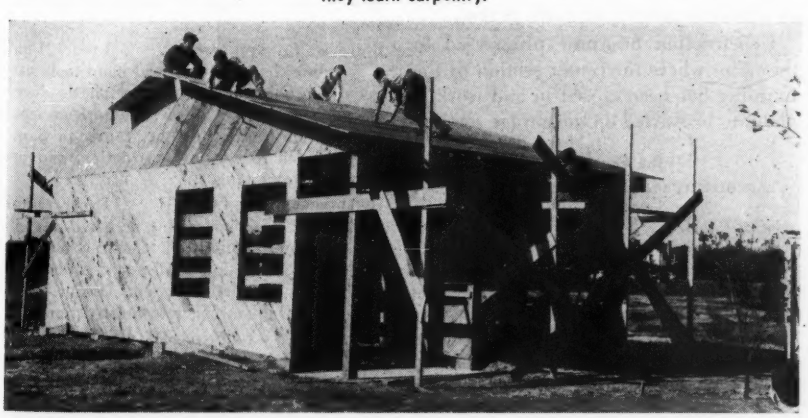
The first step was to select a good looking building, and this proved more difficult than might be imagined. Finally we found the floor plan and architect's rendering of a bungalow in the August 1945 issue of the *Practical Builder*, that could be adapted to our purpose.

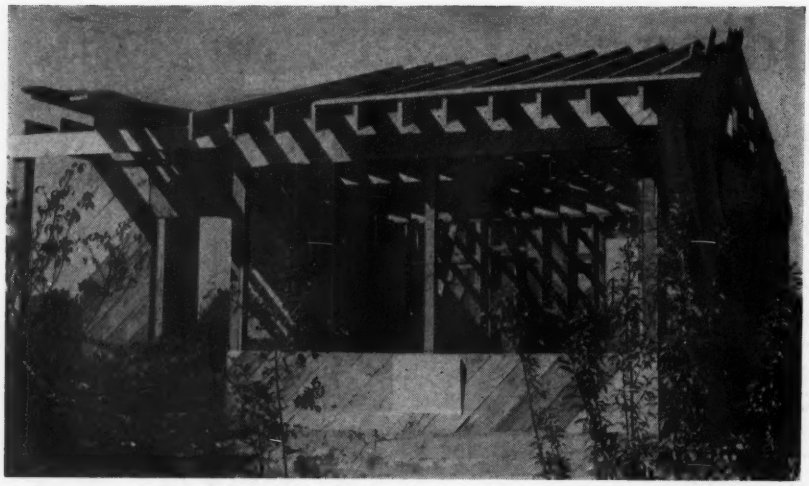
The class in architectural drafting was put to work redesigning the plan to a three-unit structure, one section to be used for a workroom, a second section for the storage of fertilizers, insecticides, and farm produce, and a third for housing the tractor and other farm machinery. The boys worked from a blow-up of the architect's rendering which we had done by a photographer. Like so many renderings, it was a pretty picture, but the practical problem of transposing it into a workable set of blueprints was a course of instruction in itself—both for the boys and the teacher. When the blueprints were finished, a model in 1/12th scale was constructed. Painted in white with green trim, it looked even prettier than the architect's picture. No board of education could have resisted this dream cottage with its surrounding lawn of green sandpaper and an appealing little fence of white palings. When the project was explained to our board and they examined the model and blueprints, the members voted to approve the undertaking and appropriated the money necessary to get started.

We immediately went ahead with the job of surveying the plot, locating the building, and excavating for foundation piers. The pent-up enthusiasm of the boys who had been waiting for this moment for many weeks gave a lift to the teacher and the supervisory staff and made everyone feel our project was educationally sound.

While the boys are hand-digging the excavations, let's take a look at the mechanics of scheduling necessary to pro-

These building construction students are taking a course in architectural drawing at the same time they learn carpentry.





The first unit of the agricultural building which will eventually consist of three units of about the same general shape and size.

vide time for work on the project without sacrificing academic and related study. Ours is the standard technical course of the New York State Department of Education designated as "Architectural Drawing and Building Construction." It is organized as a four-year program, the first two of which are really general education in character with some exploratory shop work on the industrial-arts level. In the last two years, four periods a day are devoted to specialized training—two of these in architectural drawing and two in construction shop. The registration is limited and both third- and fourth-year students are taught in the same class by one teacher, using differentiated assignments. Although not an ideal situation, with a strong teacher this device works out surprisingly well.

The four periods of specialized work are scheduled at the end of the school day, two in the woodshop and two in the drafting room. In the salubrious Long Island climate, the weather often remains mild enough to work outdoors with comfort until well into December, and spring days suitable for outdoor work arrive early in April. The work of the building construction classes is planned so that all during this open weather the boys are at work on the building the last four periods of school and thus cover much of the syllabus for Construction Shop. On stormy days and during the cold months the four periods are devoted to covering the syllabus for Architectural Drafting. By careful planning it has been possible to divide the time so that no part of the course is slighted. Having third-year and fourth-year students in the same group does have the advantage of providing experienced helpers on the job for the teacher, and gives the students opportunity for supervisory experience.

Mr. Rowland Foster, the senior teacher, uses the pupil personnel plan so familiar to teachers of the general shop. He divides the class into five groups, each of which is supervised by a foreman. The foremen are all seniors completing their last year of training in the building construction course. Supervising the foremen is a construction superintendent, a boy who has demonstrated outstanding ability and leadership. He coordinates the work of the foremen, is responsible for keeping inventory records, and acts as time keeper. Each boy in the class keeps a time book in which is recorded the jobs he has done and the time spent on each. The foremen and their groups rotate from one type of activity to another. These are typical of activities common to small-house construction, the rotation being for the purpose of giving each student as broad an experience as possible.

It can be seen from the very nature of the undertaking that the teacher must depend a great deal on student supervision. Our experience in this respect has shown that many boys of high-school age are capable of developing a high degree of leadership and responsibility in situations where the work is real.

Construction has now progressed to the point where the center section of the building has been closed in and work is about to be started on the garage section.

The Curriculum

Architectural Drawing and Building Construction

Aim of Course:

Present trends indicate that there will be an extended period of employment in the Nassau-Suffolk area for those trained in the field of architecture and building construction.

With this trend in view, Sewanhaka is offering a four-year course in Architectural Drawing and Building Construction on the technical level. It may be considered either as terminal education, or as preparatory course for college.

Types of employment for which graduates will be eligible on graduation include architect's assistant, architectural draftsman, real estate broker's assistant, building trades apprentice, or junior assistant to construction executive.

Content of Course:

First Year
English I (5)*
General Science (5)
Social Studies 9 (5)
Algebra, or General Math (5)
Woodworking I and Elective Shop (10)
Physical Ed.—Health (3)

Second Year
English II (5)
Geometry or Measurements (5)
Mechanical Drawing I-II (5)
Physics or Fundamentals of Machines (5)
Building Construction I (10)
Physical Ed.—Health (3)

Third Year
English III (5)
Int. Algebra, Trigonometry or Elective (5)
Architectural Drawing (5)
Strength of Materials —Free Hand Drawing (5)
Building Construction II (10)
Physical Ed.—Health (3)

Fourth Year
English IV (5)
Social Studies 12 (5)
Architectural Drawing II (10)
Building Construction III (10)
Physical Ed.—Health (3)

*Numerals indicate number of periods per week.

Description of Subjects

Architectural Drawing and Building Construction

Architectural Drawing I 1 year 1 unit

Lettering and drawing technics used by the architect. How to draw plans for homes. Detail drawings of typical house frames and structural details. Elementary design, including popular forms.

Architectural Drawing II 1 year 2 units

Lettering and drawing technics. Emphasis placed on drafting skills. Design in structural steel and masonry. Study of architectural orders, vignola, perspective drawing, and lights and shades.

Free-Hand Architectural Drawing ½ year ½ unit

Open to Strength of Materials students in second term. Free-hand perspective drawing, rendering in pencil, ink, and water color. Developing elevations from plan drawings. Classical orders and decorations.

Strength of Materials ½ year ½ unit

Science of mechanics and mathematics as applied to building construction. Forces and stresses. Simple stress analysis of common building structures to ascertain wind loading, snow loading, strength of component members, etc.

Building Construction 1 1 year 1 unit

Woodworking machines and hand tools used in building construction. Some emphasis placed on tool-handling skill. Practical work on small building projects. Laboratory course in simple framing, concrete form construction, and masonry and plumbing.

Building Construction II 1 year 1 unit

Practical work in framing and building. Includes more "full-sized" construction than Building Construction I. Advanced cabinet and mill work. Foundation layout. Use of transit and level. Outdoor concrete construction.

Building Construction III 1 year 1 unit

Plumbing and heating installations. Electrical installations. Painting and decorating. Interior finishing. Production mill work.

Clinker Tongs

BY *E. C. Spink*

This project can be used to teach a number of operations and processes in the general metal shop and appeals to students and parents as well because of its practicality. E. C. Spink teaches at the J. Sterling Morton High School and Junior College, Cicero, Illinois.

TESTED INSTRUCTIONAL PROJECT

ONE of our most popular projects in the general metal shop is the set of clinker tongs described here. The project is optional in our course of study but many students elect to make them because of their practicality.

The design is simple but many teaching objectives may be achieved through fabrication of the tongs. Forging, welding, metal sawing, bending are some of the processes which can be taught.

The size of the handle may be varied to meet the dimensions of the furnace in which the tongs will be used.

The materials, identified by the same number as on the drawing, are as follows:

No. 1—½" black pipe, 48" long.

No. 2—½" D. hot rolled steel, 55" long (alternate design).

No. 3—½" D. hot rolled steel, 6" long (alternate design).

No. 4—½" D. hot rolled steel, 15" long.

The procedure is as follows:

Cut pipe (No. 1 above) to desired length with hacksaw or cut-off wheel. Remove rough edges of pipe with file both inside and out. Slit pipe in center 1⅛" long as shown in drawing at *A*. Saw pipe at right angle at point *B* in drawing, removing one side of the pipe.

Cut pieces Nos. 2, 3, and 4 to desired length. Draw out one end of piece No. 2 to desired length and shape. Make a right-angle bend on tapered end 48½" from handle end. This dimension may vary, of course, with desired length of tongs. The curve in the end of piece No. 2 has an 8" radius and is made over the horn of the anvil or by using a scrolling fork.

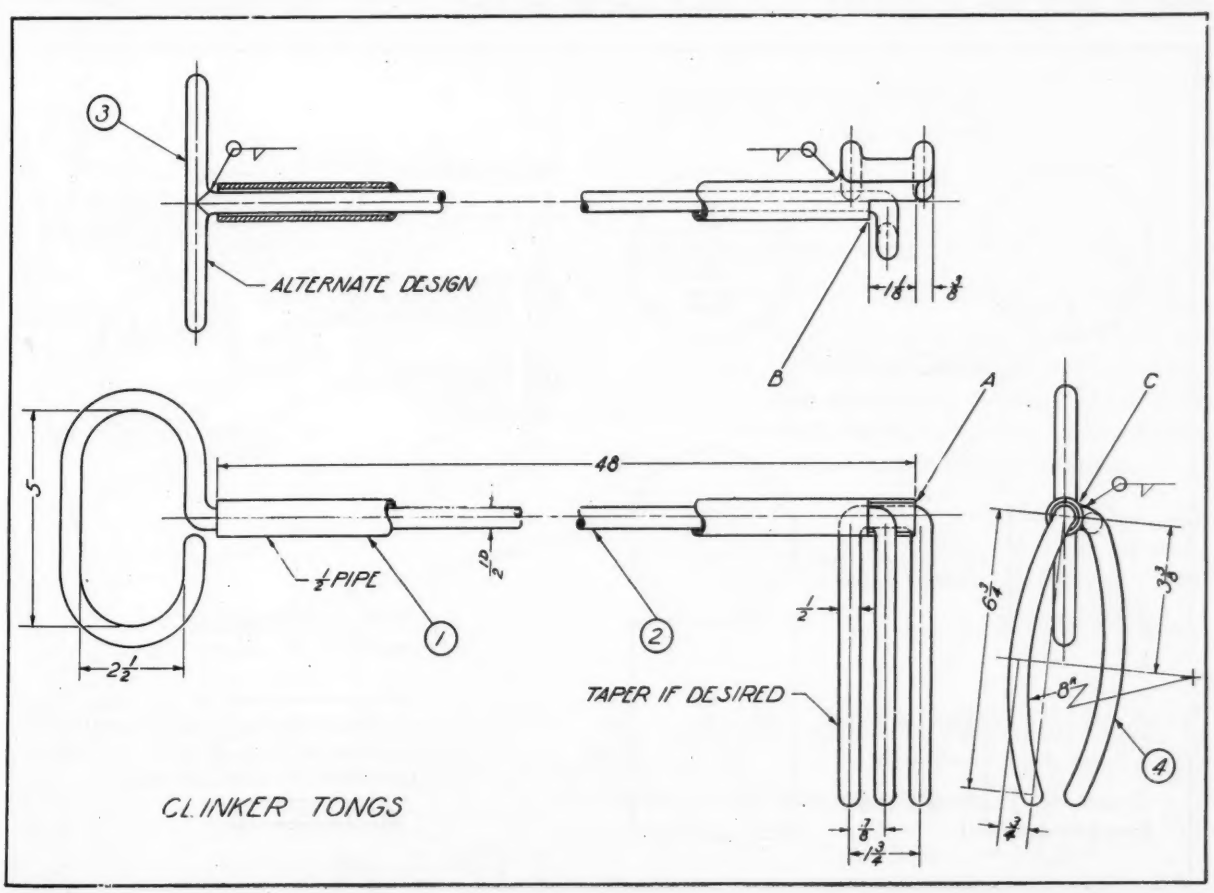
Stock for piece No. 4 should be tapered on both ends to match taper on piece No. 2. Piece No. 4 should be formed in a U-shape as shown in drawing. Form a radius to match piece No. 2. Weld piece No. 4 to pipe (No. 1) as shown in drawing at *C* so that the tongs will operate right-handed.

The ends on piece No. 3 should be rounded.

Slip piece No. 2 into pipe and weld handle (No. 3) in place as shown. Note that an optional design is shown in the lower drawing for the handle.

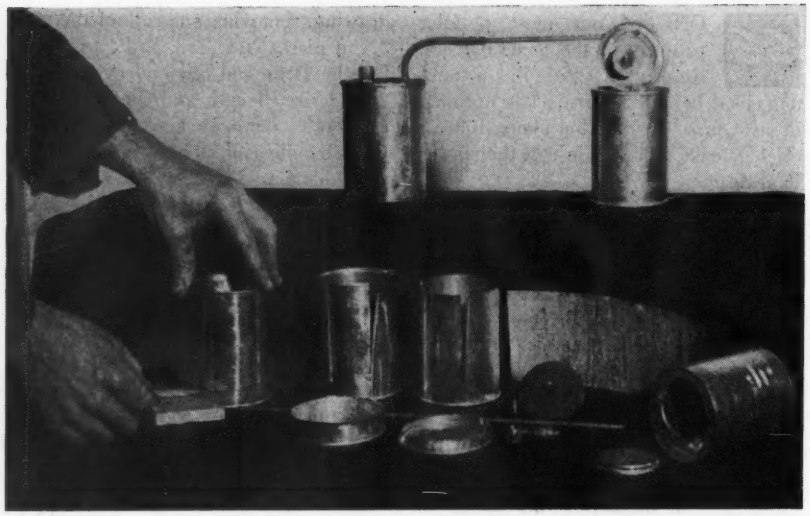
Coming in April

THE big Directory Issue of SCHOOL SHOP will be out in April. It will contain a complete list of suppliers for the industrial-education field as well as other directory features. Watch for it and keep it for year-round use.



Tin-Can Turbine

BY *Conrad Johnson*



This elementary project has a great attraction for youngsters and can be used to teach a number of processes and operations. It fits in nicely with elementary science. Conrad Johnson teaches industrial arts in the Newark, N. J., State Teachers College.

TESTED INSTRUCTIONAL PROJECT

TIN cans have been used as a source of material for many shop projects, and their usefulness in the shop has long been acknowledged. A contest sponsored by a popular magazine a few years ago proved that with a little thought and ingenuity a surprising number of very useful articles can be made of tin can material.

The design of our turbine was purposely kept very simple so that beginners in the 5th, 6th, and 7th grades should be able to make a turbine that would "really go," and in so doing, acquire some very useful information and skill.

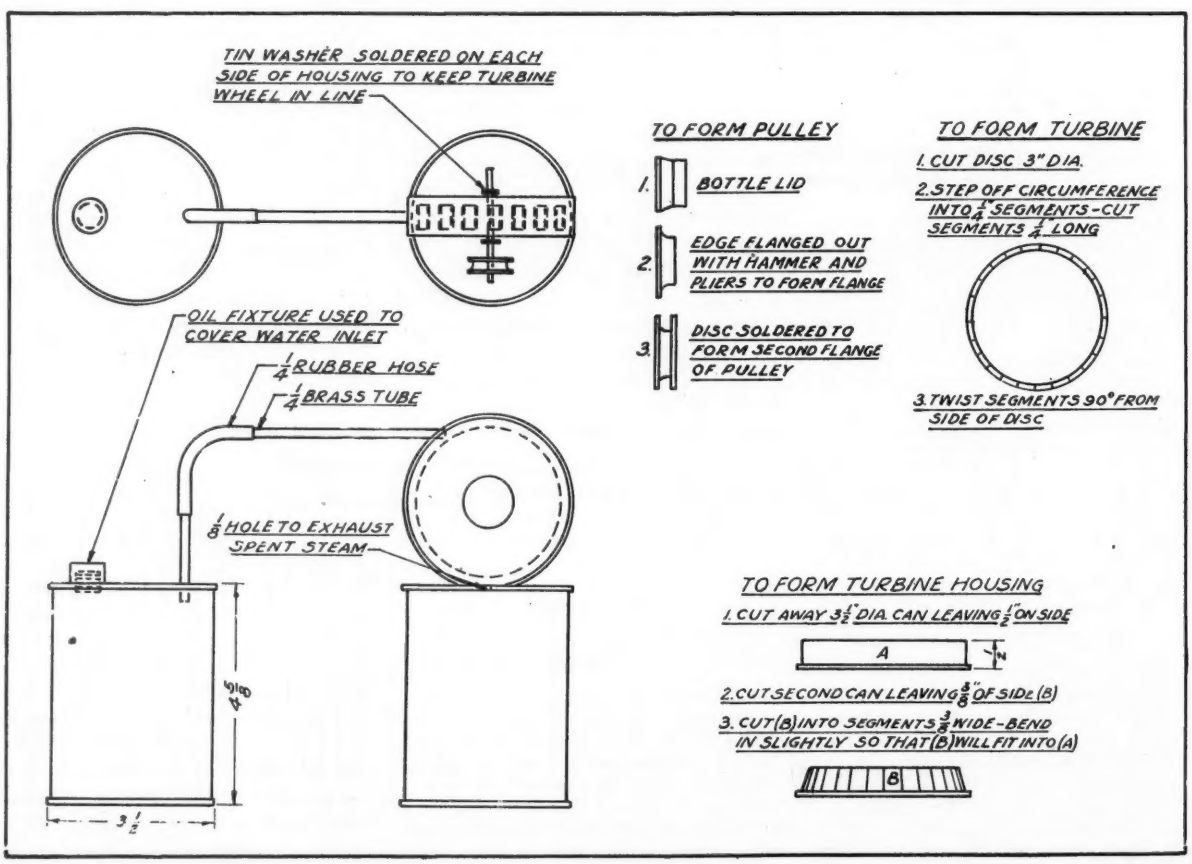
This subject, if thoroughly exploited, would provide material for several chapters in a workshop textbook. However, it was presented quite simply in our shop for the purpose of introducing the soft soldering process, and to demonstrate that there is a proper procedure for everything, even for cutting open a tin can.

The photo shows a tin can cut from top to bottom along the right-hand side of the seam with tin snips. Next the top hem is cut off, and then the shears are inserted so as to cut off the bottom along the hem. In this way the can may be cut apart with the least effort or waste of material.

On the left in the picture is shown a simple altho efficient method for marking a line around the can (the surface gauge idea). Also shown is a length of brass tubing, an oil fitting, a partly cut turbine wheel and nail-axle, and two halves of the housing.

The sizes of the various parts of this project are optional depending on the material at hand. Briefly, the procedure

(*Continued on page* 10)


TIN WASHER SOLDERED ON EACH SIDE OF HOUSING TO KEEP TURBINE WHEEL IN LINE
OIL FIXTURE USED TO COVER WATER INLET
1/4 RUBBER HOSE
1/4 BRASS TUBE
1/8 HOLE TO EXHAUST SPENT STEAM
5 1/2
3 1/2
TO FORM PULLEY
1. BOTTLE LID
2. EDGE FLANGED OUT WITH HAMMER AND PLIERS TO FORM FLANGE
3. DISC SOLDERED TO FORM SECOND FLANGE OF PULLEY
TO FORM TURBINE
1. CUT DISC 3" DIA.
2. STEP OFF CIRCUMFERENCE INTO 1/4 SEGMENTS - CUT SEGMENTS 1/4 LONG
3. TWIST SEGMENTS 90° FROM SIDE OF DISC
TO FORM TURBINE HOUSING
1. CUT AWAY 3 1/2" DIA. CAN LEAVING 1/2" ON SIDE
A
1/2
2. CUT SECOND CAN LEAVING 3/8" OF SIDE (B)
3. CUT (B) INTO SEGMENTS 3/8 WIDE - BEND IN SLIGHTLY SO THAT (B) WILL FIT INTO (A)
B

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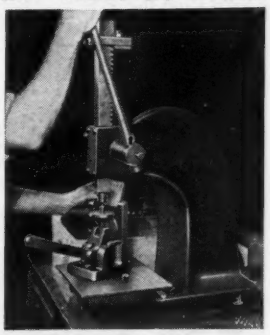

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Turbine . . . . . from page 8

followed was this: Two cans of the same diameter were marked with a line about 3/8" from the bottom and cut with shears. Cuts were spaced about 1/4" apart on the wall of one can and the two halves fitted together.

A disk for the turbine wheel was next cut and cuts spaced 1/4" apart cut 1/4" deep, and twisted 90° to form vanes. The axle was put through the wheel and secured with solder. Next the halves were put together for a trial assembly at which time the axle was marked to indicate the proper placement of the turbine wheel in relation to the sides of the housing.

A hole was made for the tubing which conducts the steam against the wheel, and the tube placed about horizontal so that the steam would contact the top of the wheel. After putting the wheel in place the two housings were soldered together and the tube attached. A small piece of tin was wrapped around the axle and soldered against the housing to keep the wheel in lateral alignment. A small hole must be made in the bottom of the housing to permit the condensed steam to escape.

The boiler is merely a milk can with the two holes soldered up. A short length of tubing was soldered in the top of the can and this connected to the intake tube with a short length of rubber hose.

An oil fitting was altered somewhat so that it would serve as a sealable inlet for water.

The pulley was fashioned from a bottle cap, a bit of tin, and solder. Several boys have used the pulleys from "Erecto" sets for this pulley.

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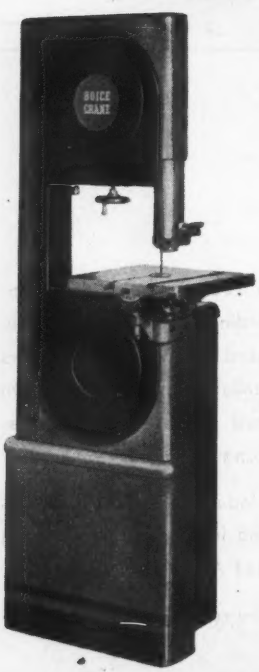

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Blade Widths: 3/16", ¼", ⅜", ½" and ¾".
Length of Blade: 98".
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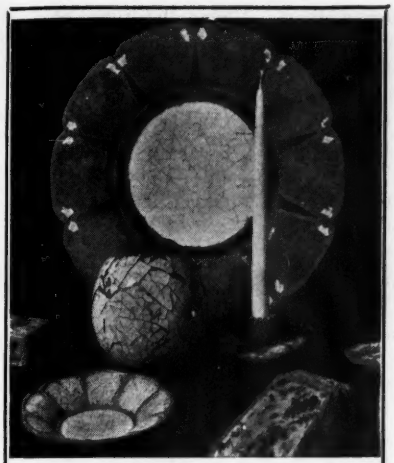
ABOUT YOUR FELLOW TEACHERS

WALLACE C. CUMMING of Omaha, Neb., has been named director of the Jacksonville, Fla., School of Technology. . . . JOHN WARFORD has been appointed instructor in industrial arts, Bemidji, Minn., State Teachers College. . . . DAVID F. JACKEY, professor of vocational education at the University of California at Los Angeles, has left for Brazil to aid in the organization of the country's vocational schools and teacher-training program. . . . New assistant state supervisors for trade and industrial education in Illinois are JON P. ADAMS, formerly of Maywood, Ill., C. R. WRIGHT, formerly of Dundee Township High School, and RICHARD L. READY, formerly of Paris, Ill. . . . LESTER HITCHENS, former state supervisor of trade and industrial education in New Mexico, has been named state director of vocational education. . . . DALE ROBERTS, Des Plaines, has been named assistant state supervisor of industrial-arts education for Illinois. . . . RALPH E. STUCKI, industrial-arts instructor at Dana Junior High School, San Diego, Calif., has joined the faculty of Louisiana State University, Baton Rouge, where he will teach industrial education. . . . CLIFFORD S. JOHNSON has been appointed to the faculty of the industrial-arts department, Platteville, Wis., State Teachers College. . . . New officers of the Kansas Industrial Education Association are as follows: president, RALPH SCHAUDE, Wichita; vice-president, LEIGH DELAY, Salina; and secretary-treasurer, R. L. GRANDLE, Wichita, who was reelected. . . . T. A. JONES is now teaching industrial arts at Western Michigan College of Education.



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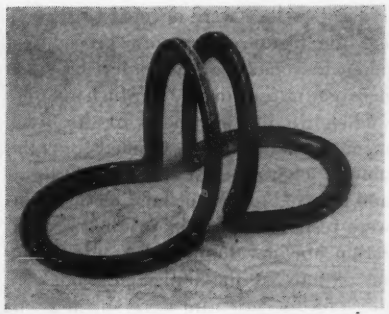

Horseshoe Bookends

BY *Stan Schirmacher*

Here is a project for beginners in welding which will attract students because of the "take-home" feature. It can be used to teach vee-butt and fillet welding. Stan Schirmacher teaches in the Clemenceau Junior High School, Cottonwood, Arizona.

TESTED INSTRUCTIONAL PROJECT

THE beginning welder in general or metal shop needs some simple project which he can keep to display his ability. Practice blocks make neither neat paper weights nor practical pocket pieces so a simple, usable project is in order. These horseshoe bookends, welded at the ends, serve to show parents that the boy can really weld and act as an incentive for practicing on the student's part.

Four pony or cowboy shoes of the same size are prepared for the welds by grinding the ends square. The top two are then beveled on the back edge and the bottom two are beveled on the front or top edge. The 90° fillet weld is made first and then the double-vee butt joint (where the two bevels come together). Any needed grinding is then done before painting. An attractive appearance can be produced by "antiquing." First paint a cream color and, when dry, apply burnt umber and streak with a rag. Felt or flock should be applied to the bottoms.

Companion pieces for a western rumpus room would be another pair inverted and used as shelf brackets.

"I don't care what the music teacher says, I'm leaving the windows open—power saw or no power saw! It's music to my ears and that's more than you can say for the girls' glee club."—*Sammy Shavings, B.S. in Ed.*

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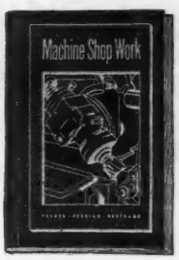

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NEWS

What's Doing in the Field of INDUSTRIAL EDUCATION

Mississippi Valley Conference

THE annual conference of men engaged in the training of teachers of industrial arts in the Mississippi Valley met in Chicago for three days in November for the thirty-third time. The conference has been in existence for 37 years but meetings were suspended during the war. This meeting, then, was in the nature of a homecoming for members.

Two sessions were devoted to reviewing the history, purposes, procedures, and achievements of the conference since its organization in 1909. Much interest was shown in the reports of the older members when they pointed out the unique character of the organization and referred to the outstanding men who were responsible for its original organization and development. As usual, the discussions of the topics presented by those on the program were spirited and stimulating.

Five men were selected from the waiting list of candidates and presented to the conference for election to active membership. Under the rules of the conference such elections require a unanimous vote. The following were elected to active membership: Dr. Dewey F. Barich, Kent, Ohio, State University; Prof. Harry A. Pederson, Platteville, Wis., State Teachers College; Dr. Kenneth L. Bing, Southeast Missouri State College, Cape Girardeau; Dr. Fred J. Schmidt, Jr., Ball State Teachers College, Muncie, Ind.; and Dr. Harold Silvius, Wayne University, Detroit, Mich.

Dr. Verne C. Fryklund, President of the Stout Institute, Menomonie, Wis., is the permanent chairman and presided at all sessions. He succeeded Dr. William T. Bawden in 1941 who asked to be relieved of the chairmanship after serving for 32 years. The thirty-fourth conference will be held in 1947 in Chicago.

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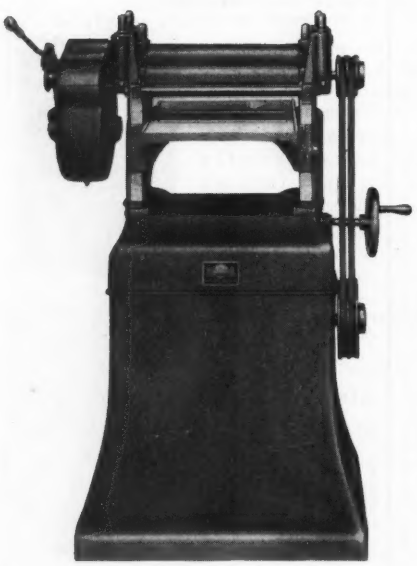

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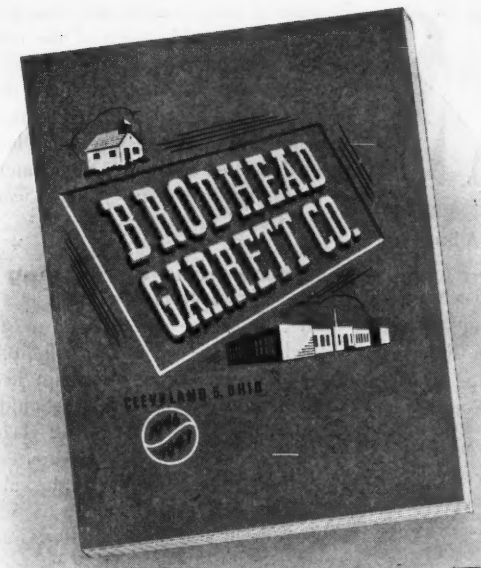
Group Visits Barrett Brake School

MEMBERS of the National Council of Local Administrators of Vocational Education and Practical Arts made an inspection tour of the Barrett Brake School at 2019 Cass Ave., St. Louis, Mo., at the time of the meeting of the American Vocational Association. The group were guests of Harry B. Barrett, president of the Barrett Equipment Co. and founder of the school. Believed to be the first of its kind in the country, the school is designed to give specialized training on the components of automotive safety: brakes, steering systems, lighting equipment, horns, and windshield wipers. The school will be

officially opened early in 1947 under the direction of Earl R. McAtee, former Army major and instructor at David Ranken Trade School in St. Louis. This is the first of 40 such schools planned for cities throughout the United States.

Texans Meet

THE Industrial Education Section of Texas State Teachers Association met on November 29 at Houston under the chairmanship of Chris H. Groneman, The A. and M. College of Texas. Topics discussed included the Texas Vocational Association group insurance program. The annual Texas Vocational Association breakfast was held the following morning.



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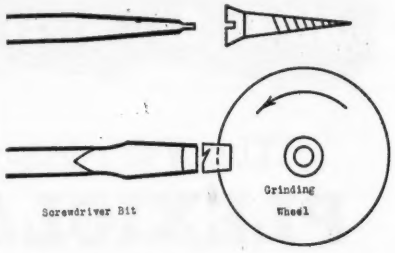
Needle for Plastic Lace

Plastic lace which is much used in handcraft work sometimes presents a problem in lacing. I have developed a needle which works very well and may be found useful by other instructors.

I took two darning needles and soldered them together with the eyes parallel. A small piece of paper can be placed in the eyes during the operation. Be careful not to solder too close to the eyes. If the double point of the needle is too broad, put a drop of solder on the points and file flat. A small notch can be cut in the plastic lace so that it will not pull out of the eye when lacing through leather and other stiff material. *—M. R. Tiefel, McKinley High School, Niles, Ohio.*

Sharpening or Shaping Screwdriver Bits

The bit of the screwdriver must be shaped properly so that it will fit into the slot of the screw. The slot in the head of the screw has square shoulders, therefore the bit of the screwdriver that fits the slot should be the same way. With the bit being shaped on the side of the wheel, the "grain" left by the wheel tends to hold and will actually hold the weight of the screw.



Shaping on the wheel is a short job. The first operation is to grind the end of the bit square and true. This is done on the face of the wheel with the support of the rest. The second and rather careful step is to bring the two faces of the bit parallel with each other by grinding on the side of the wheel. The screwdriver is placed on the rest and held so that the wheel grinds up the face of the bit about a quarter of an inch. This is done at the center of the wheel and on both faces so that they are parallel and will fit the screw perfectly.

This is a rather delicate operation but with a little practice it can be easily done and one will find much greater pleasure in the use of the screwdriver. *—William D. Chatfield, Teachers College of Connecticut, New Britain.*

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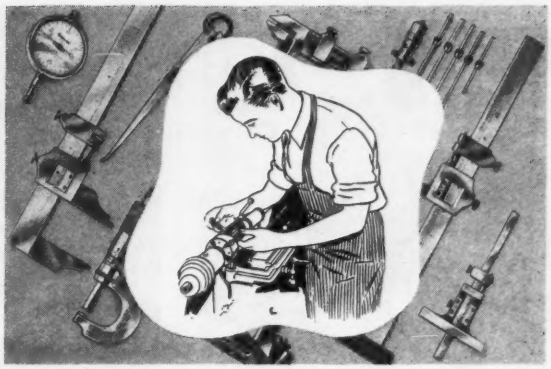

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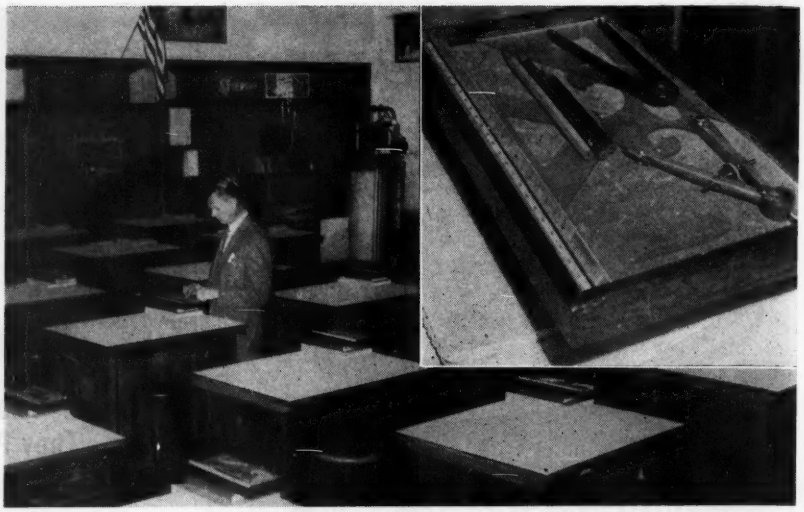

Note the neat appearance of these drawing tables with instruments up and out of the way and books under the tray. Insert shows close-up of tray with commonly used instruments in place.

Handy Instrument Tray

BY *Otto R. Koth*

Drafting teachers will find this device convenient for the easy checking of instruments and helpful in keeping down the wear and tear on instruments because they won't fall on the floor easily. Otto R. Koth teaches in the Hershey Vocational School, Hershey, Pa.

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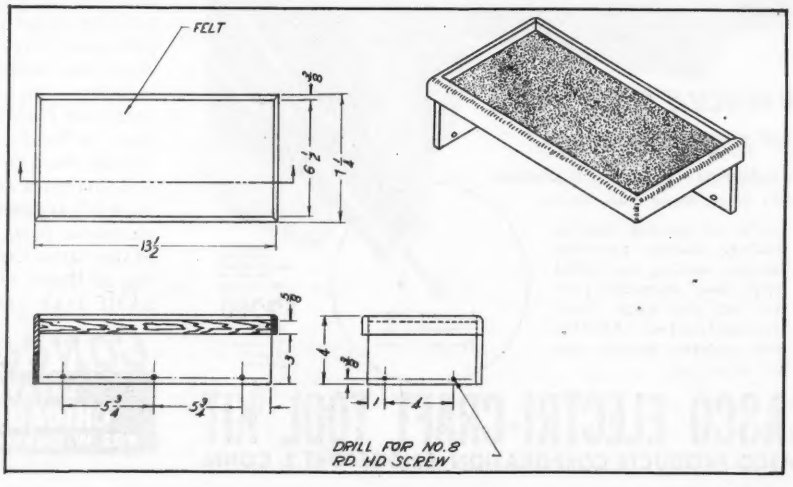
THE checking and care of instruments in the drawing room are of major importance to the drawing instructor. The instrument tray shown here has done much to make this problem a minor detail. The construction is simple as the accompanying drawing shows and it makes an ideal project for the woodshop. At our school it served as a group project for the beginners in the vocational woodshop. After staining and varnishing, the trays were lined with green felt reclaimed from pool tables.

Each tray is fastened to the upper right-hand corner of the drafting table where it is easily accessible yet out of the way. While the pupil is drawing, most of the equipment is left on the tray rather than on the desk or drawing board where it may be easily pushed to the floor. The area under the tray is free and can be used to place the drawing text when not in use.

Each tray holds a scale, two triangles, curve, two pencils, eraser, pencil pointer, compass, and dividers. When these articles are uniformly arranged on the tray an entire row can be checked from the front of the room.



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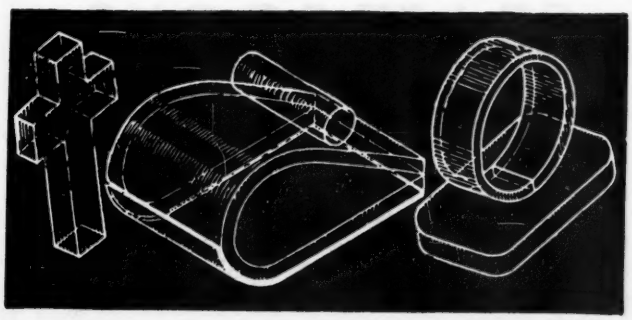

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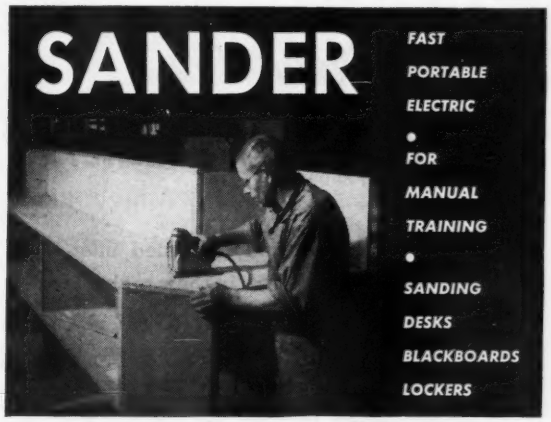

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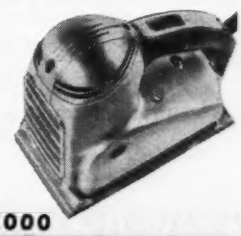

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Aircraft Woodwork. Drake. New York: The Macmillan Co., 1946. Pp. 197. $3.50.

Designed as a textbook for students preparing to take the CAA examination for aircraft mechanics, this text is an inclusive treatment of aircraft woodworking. The first half of the book consists of a technical discussion of types of wood, glues, and common tools and machines. The last half of the book contains nearly one hundred problems which show each step in construction and repair on aircraft woodworking jobs. Numerous drawings, photographs and tables serve to help the student in understanding problems encountered in aircraft woodworking. There is also a glossary of terms used.

Col. Rollen H. Drake is a research engineer, pilot, and ground school instructor and formerly taught vocational and aviation subjects in the Los Angeles, California, schools.

Radar—What It Is. Rider and Rowe. New York: John F. Rider Publisher, Inc., 1946. Pp. 80. Paper bound. $1.00.

This is the fascinating story of radar written by two people who have been close to its development and use. There are eight chapters describing underlying principles, applications, and the future of this electronic development. The book is especially useful to teachers of radio, electricity, and electronics who wish to give their students a nontechnical description of radar. Numerous line drawings and photographs serve to illustrate the text which is written in readily understood language.

The Concept of Vocational Education in the Thinking of the General Educator, 1845 to 1945, by Arthur B. Mays, Professor of Industrial Education at the University of Illinois, is a very scholarly and inclusive study of what other educators have thought about vocational education through the years. Little work has been done in the field of the history of vocational education since the days of the late Charles A. Bennett and this monograph makes a real contribution. The story is interesting and curious of the development of thinking about vocational education and gives insight into some of the present misconceptions held by general educators. The 107-page monograph is published by the Bureau of Educational Research of the University of Illinois as Bulletin 62 and may be secured for 75 cents.

Safe Practices in Metalworking (Engine Lathe) is a new series of slide films which has been produced by the Jam Handy Organization. Material in each film is divided into several lessons with review and questions to serve as a guide for group discussion. The films have been checked by shop teachers in many parts of the country. Subjects covered by each film are as follows: (1) kinds of lathes, parts, safety; (2) operating procedures, speeds; (3) carriage controls, feeds; (4) turning tools; (5) chucks, chucking work; (6) centers, setting tools, facing; (7) center holes, mounting work, facing between centers; (8) turning between centers, shouldering; (9) recessing, chamfering, filing, polishing, knurling; (10) angular turning, taper turning with a compound rest; (11) collets, faceplates, rests. Produced and distributed by the Jam Handy Organization, 2831 E. Grand Blvd., Detroit, Mich. Please mention SCHOOL SHOP when writing.

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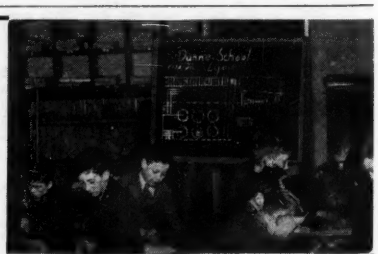

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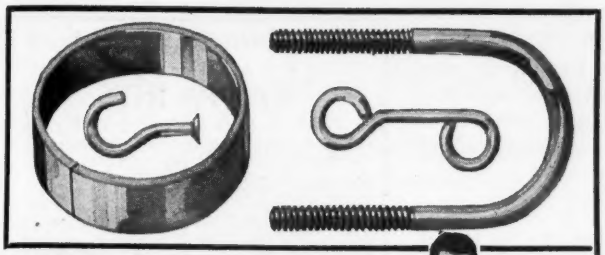

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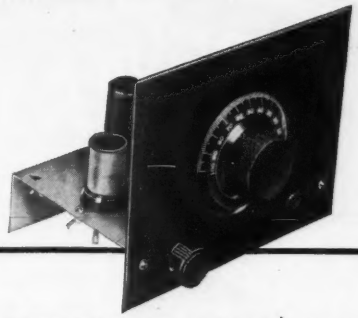

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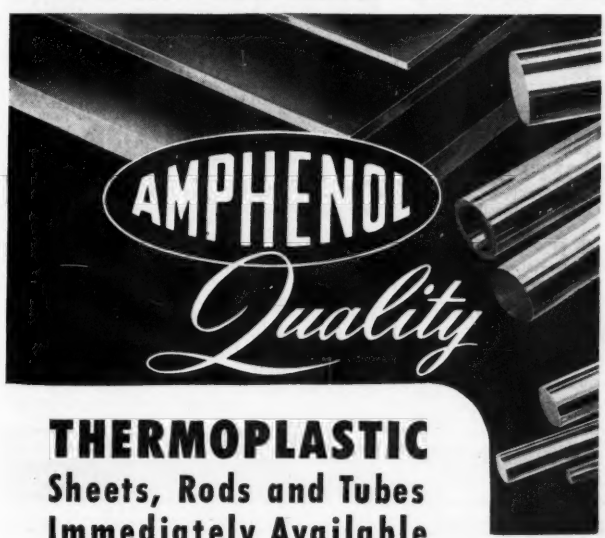

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Washington . . . from page 24

property it took over was in very poor condition. The WAA then added that it was reorganizing itself and that it hopes to wind up all of its business within the next few months.

Work Experience

Two trends concerning work experiences for youth are sharply evident this year. On the one hand, secondary-school educators are encouraging the introduction of work experience in many high-school curriculums. Galen Jones, head of the secondary education division of the Office of Education, says that work experience will spread rapidly during the next several years.

On the other hand is the concerted effort to bring back to life protective measures for working youth. Thus, 47 state legislatures are being asked by labor officials to pass laws prohibiting children under 18 from working at night in manufacturing establishments. All states are being asked to prohibit children under 18 from working in places of business at night. Forty-one states are being asked to pass laws requiring children under 18 to take medical examinations before entering employment.

Some progress on these protective laws are expected during the 1947 sessions of state legislatures. But the bulk of the task in enacting these protective measures may take a decade.

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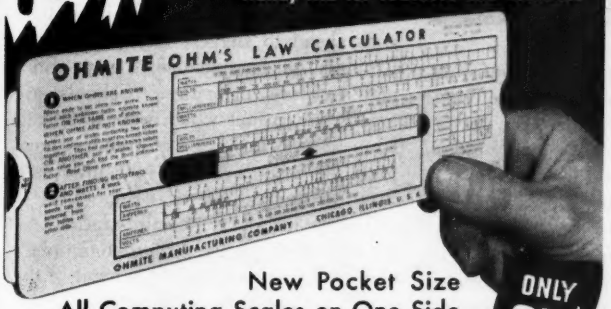

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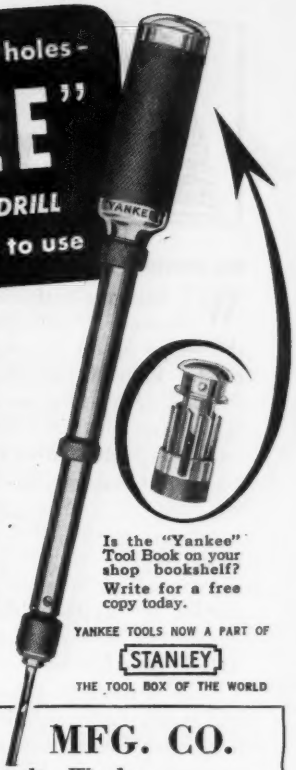

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FROM WASHINGTON

BY MICHAEL PACA

No Money Yet

WE have the authorization, but not the money." This phrase describes the status of the vocational education act for 1946, the so-called George-Barden Act. Soon after the act was passed last summer, the U.S. Office of Education asked for funds in order to carry out the act's new provisions for the period ending June, 1947. But apparently the request was pigeon-holed in the Bureau of the Budget. As this is being written, there is still no money to put the George-Barden Act in effect. The outlook right now is that money will be forthcoming only in June for the next year, 1947-48.

Even if the U.S. Office of Education had gotten the funds, it is not likely that very many dollars could have been spent under the new act. First, the new Vocational Education Policy Manual is not yet ready. Although already reviewed by a dozen committees, the thirteenth reviewing group is now assembling in Washington to take a final look at the rules and regulations which will govern the expenditure of federal funds under the George-Barden Act.

Further, not one state has yet amended its state plan for vocational education to take advantage of the liberalized provisions of the act. Hence, the George-Barden law probably will not become reality for at least six months.

Military Training

Universal military training is much talked about today in Washington. The President appointed a committee of laymen to advise him on the form the universal training is to take. The group of editors, educators, businessmen, and churchmen meet several times a month behind closed doors in the White House. They call in witnesses as they need them. Some people in Washington say that this group will definitely recommend a compulsory training program for all able-bodied young men—and that the program will call for military, citizenship, technical, and health activities.

Not content to wait for the report of the President's advisers, the War Department already is campaigning vigorously for its program which it has labeled "UMT," universal military training. It is concentrating on Congress and is feeding Congressmen "informational material" designed to convince those who need convincing that universal military training is a "must" today.

At Fort Knox, Ky., last month was activated a "pilot" model plan of UMT. Some 600 18- to 19-year-olds (regular Army recruits) were enrolled in the training course. They are being treated as if they were members of the proposed universal training program. The experiment is guided by a special code of conduct for trainees.

Washington leaders in education are watching closely the Ft. Knox project. At the same time they are sharpening their arguments for an attack on the War Department's campaigning. They will be heard from soon.

Federal Aid

As this is being written, Congressional committees are still unorganized. This much, however, is known:

Single, most powerful individual in the Senate who will affect the fortunes of education is Robert Taft, Republican from Ohio. He is a policy-making leader among Republican Senators. He is also chairman of the Senate Labor and Public Welfare Committee, which under the reorganization act of Congress will deal with questions of education.

Among Taft's first official acts was to go on the air and tell the country that, among other bills, he will reintroduce his federal aid-to-education measure. Last year this bill sought to guarantee by federal aid at least a $40-a-year schooling to children in the less prosperous states. There are indications that the $40 minimum may be raised. California now guarantees each child a $120-a-year education and other states are moving toward a $100-a-year minimum.

Sad Surplus

The surplus-property-for-schools story is nearing its end. All told, it was not a success story. How much of a failure it was is described by the House Committee set up to investigate disposal of surplus property:

"Slipshod operations, chaotic administrative procedures, and unconscionable delays have hampered the disposal of (surplus) property. . . . The regional offices have been in a state of complete disorganization, and in many instances favoritism, if not downright corruption, was apparent in their operation. . . . The policy concerning the disposal of property to educational institutions has been strict and unhelpful to them."

The Congressional committee then goes ahead to suggest that the Surplus Property Act be amended so as to eliminate existing priorities. Schools are among the groups which were to benefit from these priorities. In practice, however, the schools gained very little as a result of the priorities system.

The War Assets Administration defended itself against the committee's charges by saying that 80 percent of the

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